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Bille

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(54) **SYSTEM FOR CHARACTERIZING A CORNEA AND OBTAINING AN OPTHALMIC LENS**

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See application file for complete search history.

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(57) **ABSTRACT**

A system for determining the shape of a cornea of an eye illuminates at least one of the interior surface, the posterior surface, and the interior region of the eye with infrared light of a wavelength that can generate fluorescent light from the portion of the cornea illuminated. The generated fluorescent light is then detected. A step of illuminating can comprise focusing the infrared light in a plurality of different planes substantially perpendicular to the optical axis of the eye. From the detected light it is possible to create a map of at least a portion of the interior surface, at least a portion of the posterior surface, and/or portion of the interior region of the cornea. Clarity of vision can be determined by generating autofluorescence from proteins in the pigment epithelial cells of the retina.

9 Claims, 11 Drawing Sheets